

## Submission to Garnaut Review- Forestry and Agriculture

January 2008

Ecos acknowledges the importance of climate change for the forestry and agriculture industries. We are pleased the Garnaut review has devoted attention to this important sector and are generally impressed with the issues paper that was provided for public comment. Ecos also appreciates the opportunity to comment on this issue. We ask this Review consider this submission as a consolidation of the existing good work by many players in this sector rather than as a criticism of any efforts to date.

Ecos has over 12 years of “hands-on” experience with organisations sustainability and climate change including extensive engagements with globally-recognised leaders such as DuPont, IAG and ANZ. The company also has a long record of international thought-leadership on sustainability as business strategy & climate change issues, including carbon market experience and climate policy. This experience covers a range of sectors including energy, mining, the financial sector as well as forestry and agriculture. Ecos also has in-house experience of carbon market selling, buying and verification in both mandatory and voluntary markets.

Ecos has, as suggested by the Garnaut Review, considered this submission under four key headings:

- 1 Adaptation in Agriculture and Forestry Sectors
- 2 Mitigation Options for Forestry and Agriculture
- 3 Practical considerations regarding inclusion of these sectors in an ETS
- 4 Recognition of sinks and offsets

Ecos believe there are both significant risks and opportunities for the agriculture sector in Australia from climate change and have been pleased to see an earlier trend of denial of the issue is declining. However, there remains work to be done within the industry in its acceptance of both the opportunities (as a generator of carbon credits and increased profitability) and of the liabilities from a sector that accounts for around 17% of Australia’s greenhouse gas emissions.

Based on our experience in working with a range of companies and associations in the sector from producers, suppliers and financiers we offer the following submission. Further information about Ecos and its sustainability consulting work (including the companies services, philosophies and case studies) and about the contributors to this submission can be found at [www.ecoscorp.com](http://www.ecoscorp.com).

Please refer any further correspondence about this submission to Jack Holden, Head of Carbon Management, Ecos Corporation by email to [jack.holden@ecoscorp.com](mailto:jack.holden@ecoscorp.com) or at the above address.

## 1 Adaptation in Agriculture and Forestry Sectors

Climate change provides great risks and opportunities in agricultural and forestry sectors. All over the world the adaptive capacity of food and fibre producers will be challenged by climate change. The creative, innovative, and “climate savvy” operators and industries will emerge from this pack as leaders. Australian operators can emerge to be these leaders with suitable market signals and policy settings to address any market failures.

As traditional supplies are constrained then prices will rise and those who adapt and continue to produce will be rewarded. Those who sit back and hope things return to normal, or deny they have changed, will be disadvantaged and the producers will become unviable at an accelerated rate.

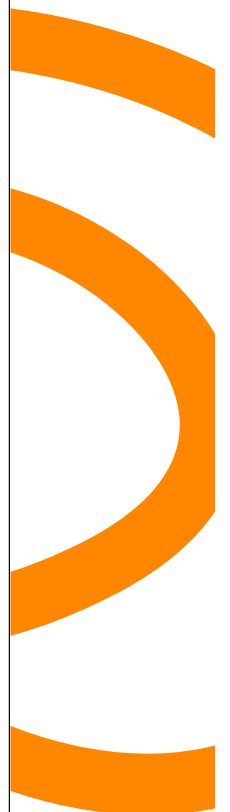
Opportunities will appear for producers who prepare for episodic weather events instead of relying on annual systems that were more suited to a stable climate. These producers will be able to capitalise on the changing climate rather than remaining vulnerable to natural disasters. Capacity building at an industry level into suitable techniques (such as opportunistic cropping and crash grazing) should be rewarded. Through increased management capacity will come resilience.

Opportunities also may exist for producers who overcome the logistical, political and even moral challenges to producing from native animals. There may be significant benefits from utilizing species that have evolved with Australia’s typically episodic climate events rather than within the more stable climates where our current food and fibre species were sourced. The drive toward sustainability in its broader sense (i.e. not simply related to climate change but taking into account Australia’s natural water scarcity) is now taking hold which places a ‘double burden’ producers to reassess production processes and species.

Primary producers will need exit strategies and structural adjustment packages will need to consider these emerging trends to preserve the capacity of the agricultural sector and the respect for those who operate within it.

Climate change will affect supply chains, markets, management capacity and competitors. A balance of “top down” scenario driven assessments balanced with “bottom up” enterprise scale vulnerability assessment is essential to minimize the risks and maximize the opportunities for primary industries.

Increasing environmental impacts from inappropriate expansion into new, and perhaps more marginal lands in Northern Australia will be resisted by consumers and the community. Sustainability and climate change adaptation are now key drivers to be integrated into the development of the agriculture and forestry sectors.



## 2 Mitigation Options for Forestry and Agriculture

Mitigating an agricultural emission is just as important as reducing an emission from any other sector. In responding to climate change it is far too early, if ever, to assume we have the luxury of ignoring any emission source and concentrating our efforts in a smaller number of baskets each of, unknown or unknowable potential.

However, agricultural emissions have many different sources. There are many heterogeneous actions and the diffuse locations for these sources. This contrasts greatly with emissions from other sectors such as energy and transport where mass produced fuels or distribution networks allow for greater certainty in accounting for emissions. Though the production and distribution of products such as fertilisers (and the related nitrous oxide emissions) are usually concentrated in a handful of companies. Ecos understands some efforts are being made at the producer level to address this source of emissions.

### 2.1 A Primary Industries Emissions Trading Scheme

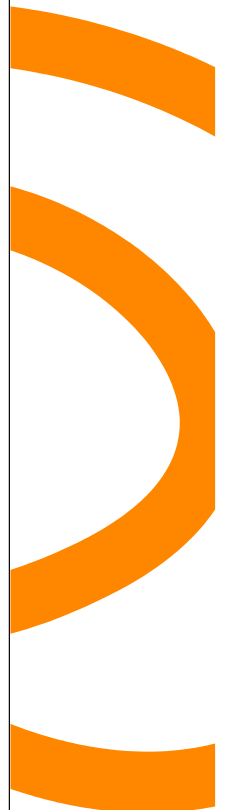
Consequently reducing agricultural emissions in a market-like scheme presents some unique challenges. The certainty and confidence needed by buyers in a mandatory carbon market is currently difficult to achieve with perhaps the exception of reforestation activities under Article 3.3 of the Kyoto Protocol. Therefore we recommend for all other agricultural emissions and removals that a sectoral emissions market be introduced.

The centrepiece of this approach, in our view, is a discrete emissions trading scheme for primary industries that is linked to the broader national ETS. Initially these links will be restricted to well understood actions such as reforestation but they can be progressively strengthened as the challenges in this sector are overcome. This allows for a “learning by doing” approach but within a market environment. This market then develops the capacity of the sector to reduce emissions as market like incentives for good practice and penalties for poor practice are trialled, refined and then expanded.

In summary the scheme must be designed to reduce emissions by:

1. rewarding the innovators
2. penalizing poor practice
3. improve buyer confidence of the verification and quality of agriculture and forestry abatement actions so transition of these actions to full carbon market becomes possible.

Incentives for keeping something that already exists because of commercial or regulatory requirements are clearly not additional. Conversely good policy should also provide disincentives for excessive degradation of a carbon store. The agricultural and forestry sector will no doubt be seeking inclusion of good practice as in an ETS however this should not be allowed to occur without some obligation, across the sector, to identify, quantify and put a price on actions that cause emissions. Introducing the need to purchase carbon permits for any approved land clearing is an obvious example.



Land clearing legislation now exists in all states and territories and without doubt the primary drivers of this were not carbon policy but more likely soil conservation, water quality, biodiversity and salinity outcomes. Most of this one-off carbon gain that was enshrined in Australia's Kyoto targets may have happened without a carbon objective. This regulatory framework is lacking in many developing countries where avoided deforestation incentives are therefore appropriate.

The following is a list of actions that could be considered for progressive inclusions in a discrete agricultural ETS to determine effectiveness of a market mechanism. Permits may be required for actions that are outside of an acceptable range on a \$/tonne basis. Conversely this could be avoided by increasing, or purchasing, permits from action that remove carbon or reduce emissions to within an acceptable range. Suitable accounting and verification protocols will need to be developed and tested for each action. These could include activity based "baseline and credit", real time measurement or proxies.

**Liabile Actions that create emissions (may need a permit)**

- Land clearing
- Enteric methane
- Excessive or inappropriate cultivation
- Excessive or inappropriate fertiliser use

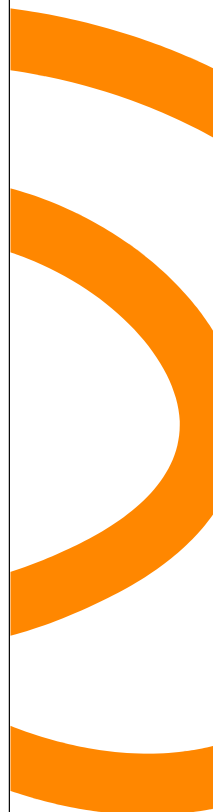
**Positive Actions (Removals that create a permit)**

- New plantations (can sell into broader ETS initially)
- Additional crop growth
- Pasture growth
- Increased soil carbon
- Establishment of orchards, vineyards and other horticulture
- Improved manure management

**Emissions that should not need a permit**

- Fuel & electricity use that is covered in an ETS
- Biomass burning would not be liable as part of an ongoing growth/harvest cycle

If the liability levels in this discrete market are not sufficient to create demand for carbon removals then government may intervene and stimulate demand by buying permits. This may be a temporary, or ongoing intervention that overcomes the current market failure to provide sufficient capacity building, innovation and R&D that is needed to adequately reduce emissions from this sector.



### 3 Practical considerations regarding inclusion of these sectors in and ETS

The following issues require consideration in the design of any ETS for agriculture. With the exception of the issue of “permanence” then these issues are likely to be found in other sectors as well.

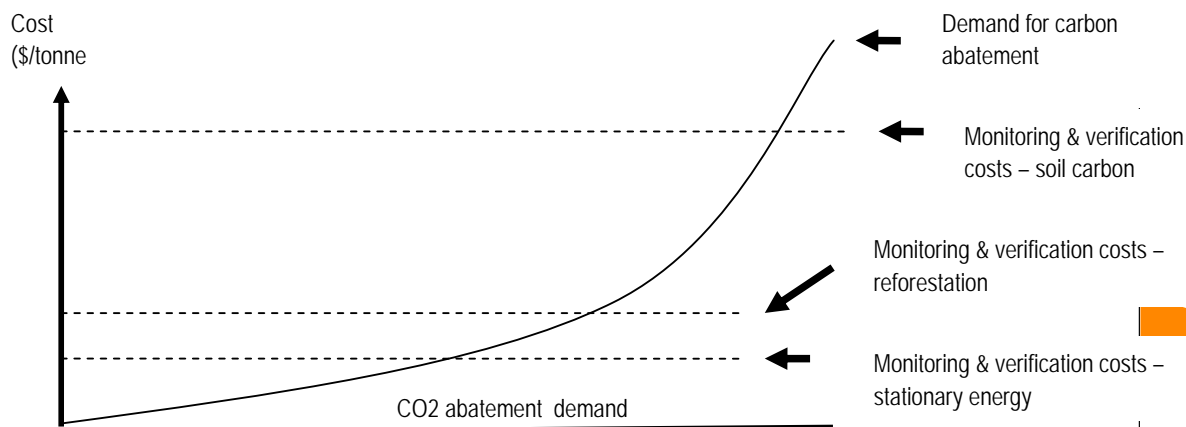
- Verifying the *permanence* of a viable action (and related reporting mechanisms)
- Thresholds for including or excluding a certain activity
- Accounting using real time measurement after the emission/removal or proxies beforehand
- Compliance provisions
- Verification and auditing
- Quantifying uncertainties
- Creating a temporary floor price for some key activities to encourage private investment

Farm emissions are diverse in type, intensity and timing and proxies will be difficult. However some proxies will be easier than others. Transaction costs for securing carbon abatement in agriculture are likely to be relatively high.

#### **Transaction Costs and Agricultural Carbon Abatement**

An abatement option is only viable if it returns more than the cost of supply plus any transaction costs. Transactions costs for diffuse abatement options such as increasing carbon in agricultural soils are still relatively high. Further research is needed to reliably verify carbon to a comparable standard with other abatement options. Currently using cheaper verification methods (such as remote sensing and radiometrics) will need considerable ground sampling to obtain an acceptable level of confidence in a wider market. These extra costs make these activities unviable at any realistic carbon price. As prices increase to viable then many other abatement options will also become competitive with agricultural carbon. Figure 1 shows this in schematic form.

*Figure 1 Relative Transaction Costs of Carbon Abatement Options*



## 4 Recognition of sinks and offsets

Forestry and agricultural sinks will make a useful contribution to our climate response provided the issues of verification and permanence are adequately resolved.

### Soil Carbon

The inclusion of soil carbon offsets in an ETS is premature – albeit increasing soil carbon offers substantial additional benefits such as water retention, biodiversity, reduced erosion and overall increases in soil health. Advocates of changed grazing management practices suggest large quantities of soil carbon may be retained through these practices and work should be done to assess this. Soil carbon advocates will however be required to demonstrate their offsets are credible – verifiable, additional and durable. A paucity of relevant published and peer-reviewed research on this topic needs addressing. The valuable work of the former CRC for Greenhouse Accounting should be considered by the Garnaut Review. Their view is that the US soil carbon experience from cropping is not comparable in Australia for a range of reasons

*“The study established that no-till farming does not have the same carbon impact in Australian conditions as it does elsewhere. Unlike research in the US, the CRC for Greenhouse Accounting study found no significant difference in carbon sequestration between no-till and conventional tillage except when other farming practices, such as application of nitrogen fertiliser and management of stubble, were also changed.”<sup>1</sup>*

Carbon in soils is often cited as a significant solution to climate change, Australia generally has very low soil carbon level (1-2%) compared with 4 – 5% in many other areas. But the use of soil carbon as a mitigation tool needs to be carefully considered. It should be acknowledged that the carbon already stored in soils is considerable but what matters in climate policy is rewarding *additional* storage of new carbon.

### Carbon and fertilisers

There is some early and promising work proceeding around the idea of carbon as a stabiliser in conventional fertiliser applications (commonly referencing the idea of “terra-preta” soils). Typically, this could involve adding a quantity of carbon (including charcoal generated from a biomass source) to a conventional NPK fertiliser as both a form of sequestration of the carbon but also to stabilise the nitrogen to reduce its oxidization to the atmosphere. As with the soil carbon agenda this work is extremely preliminary and any possible credit generation is as yet some way off but price signals are needed to encourage the introduction of such innovative solutions.

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<sup>1</sup> <http://www.greenhouse.crc.org.au/research/a1.cfm>



### **Biosequestration and Water Use**

Young growing forests are good at sequestering carbon but there is a similar effect on water use. Mature forests have a water balance that does not reduce streamflows. This increase in water use as a new forest establishes is temporary.

The allocation of scarce water to activities with commercial and environmental outcomes cannot be solved by carbon markets. This remains a planning and resource allocation issue . An ETS could specify that forest sinks must abide by whatever statutory planning and water market constraints for them to be eligible for inclusion in an ETS but and ETS design should not attempt to resolve these issue. Designing a carbon market is a blunt instrument for achieving other policy outcomes that will be better served by other processes.

We thank you for your consideration of this submission and look forward to subsequent developments in these important issues from your review. Please contact us at the above address if you have any queries from this submission. Please refer any further correspondence about this submission to Jack Holden, Head of Carbon Management, Ecos Corporation by email to [jack.holden@ecoscorp.com](mailto:jack.holden@ecoscorp.com), by phone on 0407 557668 or at the above address.

Regards

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